2.12 Biological Resources

2.12.1 Vegetation and Cover Types

Updated vegetative cover typing within the I-355 South Extension alignment conducted during the fourth quarter of 1998 by the Illinois Natural History Survey (INHS) found few changes (INHS, 1998). Cover type change observed amounted to early succession of grass and shrubs onto scattered farm fields left out of production and former home sites. However, the majority of cover types within the I-355 South Extension alignment have remained unchanged. Refer to 1996 FEIS, Section 2.12.1.

2.12.2 Wildlife

INHS field reviewed and updated the wildlife survey data compiled for the 1996 FEIS in October and November of 1998 (INHS, 1998). The INHS field review found few habitat changes that would impact wildlife composition. INHS staff recommended no additional fieldwork beyond actions recommended in the 1996 FEIS to monitor specific riparian habitat along Black Partridge Creek. Refer to 1996 FEIS, Section 2.12.2.

Birds

INHS field review of avian habitat (INHS, 1998) found few habitat changes. Documented changes included early grass and shrub succession within fallow fields and cleared home sites, and loss of a swath of upland forest adjacent to Black Partridge Forest Preserve. These changes, however, were not of a magnitude to significantly alter avian composition within the Project Corridor and INHS staff recommended no additional fieldwork. Refer to 1996 FEIS, Section 2.12.2.1.

Mammals

INHS field review of mammal habitat (INHS, 1998) found little change. Documented change was identical to that of the bird habitat review. INHS survey staff observed nothing during the 1998 review that would substantially alter the original mammalian fauna conclusions of the 1996 FEIS or suggest the need for additional fieldwork. Refer to 1996 FEIS, Section 2.12.2.2.

Reptiles, Amphibians, Fish, Mollusks and Macroinvertebrates

INHS field review of reptile and amphibian habitat (INHS, 1998) found little change from the 1996 FEIS survey aside from the loss of a swath of upland forest adjacent to Black Partridge Forest Preserve. INHS staff concluded no additional reptile and amphibian fieldwork was necessary.

INHS field review of fish, mollusks and macroinvertebrates habitat (INHS, 1998) found little changed from the 1996 FEIS survey except for Fraction Run and Black Partridge Creeks. Fraction Run Creek underwent additional channalization for golf course development originally documented in the 1996 FEIS. Black Partridge Creek changed in water shed size due to industrial park development along the Creek's upper tributaries. This habitat change, however, was determined not significant. INHS staff recommended no additional studies or analysis beyond actions recommended in the 1996 FEIS survey reports to monitor specific sites along Black Partridge Creek providing potential habitat for the mottled sculpin (*Cottus bairdi*), a fish species considered rare in Illinois, with the excep-

tion of a few tributaries of the Fox River where the species is common, due to its narrow habitat requirements. Refer to 1996 FEIS, Section 2.12.2.3.

2.12.3 Threatened and Endangered Species

INHS field review for federal and state listed threatened and endangered species (INHS, 1998) found no threatened or endangered species beyond those observed in the 1996 FEIS surveys. For those species, minor variations in species density were observed, however, no new habitat or populations were observed. Refer to 1996 FEIS, Section 2.12.3

Updated survey findings for federally and state listed threatened and endangered species observed within the I-355 South Extension alignment by the INHS surveys conducted for the 1996 FEIS are as follows.

Federally Listed Species

INHS field review (INHS, 1998) found no habitat for, or population of, federally listed species in addition to those documented in the 1996 FEIS. The 1996 FEIS documented two federally listed species: the federally endangered Hine's emerald dragonfly (*Somatochlora hineana*) and the federally and state listed endangered Leafy prairie clover (*Dalea foliosa).*

On November 13, 1995, the USFWS issued a biological opinion that no adverse affects to the Hine's emerald dragonfly are likely as a result of the proposed action. As a condition of the biological opinion, continued research would be conducted to better understand the biology of the species. The INHS and the other members of the Recovery Team have continued to conduct research at a number of sites in Illinois in the Des Plaines River Valley as well as in Door County, Wisconsin and the upper Penninsula of Michigan. The research conducted has been utilized by the Hine's Emerald Dragonfly Recovery Team in the preparation of the Hine's Emerald Dragonfly Draft Recovery Plan dated June 30, 1999. The following discussion supplements the text of the 1996 FEIS.

Researchers have documented the continued presence of the Hine's emerald dragonfly within the Des Plaines River Valley. The dragonfly recovery plan recovery strategy identifies two recovery units, a Northern Recovery Unit and a Southern Recovery Unit. The proposed action falls within the Southern Recovery Unit. The Recovery units contain populations of Hine's emerald dragonflies. For example, the dragonflies in the lower Des Plaines River Valley constitute a population. The recovery team further divided populations into subpopulations defined as a local population occurring at a specific geographic site. The proposed action lies outside the limits of what is known as the Lockport subpopulation. Within the Lockport subpopulation, boundaries are the Lockport Prairie Nature Preserve and the River South Parcel, which support the greatest numbers of Hine's emerald dragonflies. These sites also support the largest numbers of larvae and exuviae. Other Des Plaines River sites identified in the recovery plan with smaller dragonfly populations includes the Keepataw Forest Preserve. According to the recovery plan, these smaller sites may serve as recruitment sources for the larger subpopulations and are considered important for the maintenance of the species.

The proposed action crosses the Keepataw Forest Preserve where adults have been observed and a larvae found. Between 1990 and 1999, more than 200 hours were spent by INHS researchers to identify dragonfly activity at Keepataw. The life stage activity ob-

served included both adult behavior and larvae. The adult behavior included feeding flights, territorial patrol, transient flights and copulation (Recovery Plan 1999). Eighty-five sampling efforts by the INHS between 1996 and 1998 found one larvae at the seep area at the western end of the Keepataw Forest Preserve. No larvae have been found within the Project Corridor. The USFWS publication titled Hine's Emerald Dragonfly Draft Recovery Plan dated June 30, 1999 can be consulted to obtain further information regarding the biology and recovery strategy for the species.

INHS staff documented the continued presence of the Leafy prairie clover at the same location and density as documented in the 1996 FEIS. INHS also re-assessed habitat suitability within the I-355 South Extension alignment for the federally endangered Indiana bat (*Myotis sodalis*). Staff concluded that only marginally suitable roosting habitat occurred within the alignment and those colonies were not likely present because the limits of the species range was south of the corridor. Refer to 1996 FEIS, Section 2.12.3.1.

State Listed Species

The 1996 FEIS documented the following state listed species: spotted turtle (*Clemmys guttata*), great egret (*Ardea alba*), king rail (*Rallus elegans*), black-crowned night heron (*Nycticorax nycticorax*), double-crested cormorants (*Phalacrocorax auritus*), pied-billed grebe (*Podilymbus podiceps*), common moorhen (*Gallinula chloropus*), osprey (*Pandion haliaetus*), brown creeper (*Certhia americana*), cooper's hawk (*Accipiter cooperii*), northern harrier (*Circus cyaneus*), Hine's emerald dragonfly (*Somatochlora hineana*), white lady's slipper (*Cypripedium candidum*), slender sandwort (*Arenaria patula*) and sedge (*Carex crawei*).

The 1998 INHS field review found no occurrence of state listed threatened or endangered species or habitat beyond those documented in the 1996 FEIS. For those listed species documented in the 1996 FEIS, INHS staff found no significant change to habitat or occurrence of listed populations within the I-355 South Extension alignment except for the white lady slipper, sedge and slender sandwort.

The white lady slipper was documented in the 1996 FEIS at a site north of Goose Lake. The 1998 survey found the population to be present at the site although numbers of individuals declined to 36 individuals from approximately 1,000 in 1979. This population decline was attributed to brush and cattail encroachment. This species was downgraded in 1999 from state endangered to threatened due to increased numbers elsewhere in the state.

The slender sandwort was also downgraded in 1999 from state endangered to threatened due to increased numbers elsewhere in the state. Of the 10 to 13 colonies surveyed within the corridor in 1989, only one was present in 1999. This colony, located 52 to 61 meters (170 to 200 feet) from the I-355 South Extension right-of-way, contained 500 to 600 plants in 1989. INHS estimated the colony population at 6,000 plants in 1999. A new colony containing nearly 100 plants was found approximately 850 meters (2,790 feet) west of the proposed I-355 South Extension centerline. This species exhibits wide annual fluctuations in numbers due to specialized habitat requirements and competition failure to other more aggressive plant species. Although recent illegal dumping destroyed three colonies, population variation at the majority of other Project Corridor sites was attributed to ecological change.

As for the remaining state threatened or endangered species documented within the Project Corridor in the 1996 FEIS, *Carex crawei*, a sedge, was delisted as a state threatened species, the federal and state endangered Hine's emerald dragonfly and Leafy prairie clover are addressed in 1996 FEIS, Section 2.12.3

2.13 Air Quality

2.13.1 Summary of Air Quality

The Project Corridor is located within the Chicago metropolitan area. This area is in violation of the National Ambient Air Quality Standard (NAAQS) for the pollutant ozone. The area is classified as a "Severe" ozone non-attainment area and it includes the Counties of Cook, DuPage, Kane, Lake, McHenry, Will and Aux Sable, and Goose Lake Townships in Grundy County, and Oswego Township in Kendall County. Due to the non-attainment status of the area, the State of Illinois has developed a State Implementation Plan (SIP) identifying programs intended to reduce ozone precursor emissions. A "Severe" classification means that the region must implement specific programs to attain air quality standards by the year 2007.

A complete listing of the NAAQS are shown in Table 2-16. The primary standards are established at levels which are intended to protect the public health. Secondary standards are required to protect the public welfare from any known or anticipated adverse effects of a pollutant.

Ozone is a colorless gas with a pungent odor and is associated with smog or haze conditions. Ozone is not directly emitted into the atmosphere but is formed when precursor emissions, hydrocarbons, oxides of nitrogen, and carbon monoxide react in the presence of sunlight. Because of these complex relationships and the regional nature of ozone, estimating and controlling ozone formation requires factoring all hydrocarbon, oxides of nitrogen, and carbon monoxide emissions within the region and thus, the impact on ozone concentrations from individual projects or facilities may not be observed in the immediate Project Corridor.

In addition to the SIP requirements, metropolitan planning organizations (MPOs) are required to undertake conformity determinations on metropolitan transportation plans and transportation improvement programs before they are adopted, approved, or accepted. Section 176 (c)(4) of the Clean Air Act Amendments of 1990 requires that transportation plans, programs, and projects which are funded or approved under Title 23 U.S.C. must be determined to conform with State or Federal air implementation plans. Conformity to an implementation plan is defined in the Clean Air Act as conformity to an implementation plan's purpose of eliminating or reducing the severity and number of violations of the NAAQS and achieving expeditious attainment of such standards. The implementing regulations for determining conformity of transportation projects are found in 40 C.F.R Part 93, "Criteria and Procedures for Determining Conformity to State or Federal

Table 2-16
Summary of National and State Ambient Air Quality Standards

Pollutant	Averaging Time	Primary	Secondary
Particulate Matter 10 micrometers (PM_{10})			
	Annual Arithmetic Mean	50 ug/m^3	Same as Primary
	24-Hour	150 ug/m^3	Same as Primary
2.5 micrometers ($PM_{2.5}$)**	Annual Arithmetic Mean	15.0 ug/m^3	Same as Primary
	24-Hour	65 ug/m^3	Same as Primary
Sulfur Dioxide (SO_2)	Annual Arithmetic Mean	0.03 ppm (80 ug/m^3)	None
	24-Hour	0.14 ppm (365 ug/m^3)	None
	3-Hour	None	0.5 ppm (1300 ug/m^3)
Carbon Monoxide (CO)	8-Hour	9 ppm (10 mg/m^3)	Same as Primary
	1-Hour	35 ppm (40 mg/m^3)	Same as Primary
Ozone (O_3)	1-Hour/Day*	0.12 ppm (235 ug/m^3)	Same as Primary
	8-Hour/Day**	0.08ppm	Same as Primary
Nitrogen Dioxide (NO_2)	Annual Arithmetic Mean	0.053 ppm (100 ug/m^3)	Same as Primary
Lead (Pb)	Quarterly Arithmetic Mean	1.5 ug/m^3	Same as Primary

*Note: All standards with averaging times of 24 hours or less are not to have more than one actual or expected exceedance per year. *The 1-hour ozone standard pertains only to Cook, DuPage, Kane, Lake, McHenry, and Will Counties, and Aux Sable and Goose Lake Townships in Grundy County, and Oswego Township in Kendall County in the Chicago area; and to Madison, Monroe and St. Clair Counties in the Metro-East St. Louis area. **The ozone 8-hour standard and the PM2.5 standards are included for information only. A 1999 federal court ruling blocked imple- mentation of these standards, which USEPA proposed in 1997. The USEPA has appealed that decision to the U.S. Supreme Court.*

Implementation Plans of Transportation Plans, Programs and Projects Funded or Approved under Title 23 U.S.C. or the Federal Transit Act". Highway or transit projects which are funded or approved by the Federal Highway Administration (FHWA) or the Federal Transit Administration (FTA) must also be included in a conforming plan before they are approved or funded by DOT or an MPO.

Existing air quality within the Project Corridor, as defined by monitoring data is available at five locations as listed in Table 2-17 with the owner/operator and the pollutants measured at each site. In 1999 there were no exceedances of the 1-hour ozone NAAQS in the Chicago metropolitan area (see Table 2-18). Refer to 1996 FEIS Section 2.13.1 for additional Project Corridor narrative.

Particulate Matter less than 10 micrometers (PM_{10}), represents the fraction of Total Suspended Particles (TSP) with a particle size of less than 10 micrometers. In 1999, no sites exceeded the Primary Annual Standard of 50 ug/m^3 or the 24-hour PM_{10} Primary Standard of 150 ug/m^3 (see Table 2-18). The air quality analysis for the Project Corridor is in 1996 FEIS, Section 4.12.

2.13.2 Pollutant Standard Index

The Pollutant Standard Index is the national standard method for reporting air pollution levels to the general public. The PSI is based on the short-term Federal National Ambient Air Quality Standards (NAAQS), the Federal episode criteria and the Federal

Table 2-17
Air Quality Monitoring Sites in the Project Corridor

Monitoring Location	Owner/Operator	Air Monitor Network	Pollutant Monitored
Cook County			
Lemont - 729 Houston	Cook County Department of Environmental Control	SLAMS	SO_2, O_3
DuPage County			
Naperville – 400 S. Eagle Street	Illinois EPA	SLAMS	$PM_{2.5}$
Will County			
Joliet – Midland and Campbell	Illinois EPA	NAMS, SLAMS	PM_{10}, $PM_{2.5}$
Joliet –IL Route 6 and Young Road	Illinois EPA	NAMS, SPMS	SO_2, Wind Speed/direction
South Lockport - 2021 Lawrence	Illinois EPA	SLAMS	O_3

Source:1999 Illinois Annual Air Quality Report.
Notes: 1) Indicates air-monitoring stations.
SLAMS - State/Local Monitoring Station
NAMS - National Air Monitoring Station
SPMS - Special Purpose Monitoring Station

2) Pollutants monitored in Table 2-17 include the following:
PM_{10} - Particulate Matter (10 microns or smaller)
PM2.5 - Particulate Matter (2.5 microns or smaller)
SO_2 - Sulfur Dioxide
O_3 - Ozone

Table 2-18
Existing Air Quality in the Project Corridor

Pollutant Name	Status (1999)
PM_{10}	The primary annual standard and the 24-hour standard for PM_{10} were not exceeded in the project corridor.
Ozone	There were no ozone exceedances of the 1-hour standard days in the Chicago region.
Sulfur Dioxide	There were no exceedances of the annual, 24-hour, or 3-hour standards in the project corridor in 1999.
Nitrogen Dioxide	There have been no violations of the annual primary since 1980 in Illinois.
Lead	There were no violations of the quarterly primary standard recorded in the region.
Carbon Monoxide	There were no exceedance days recorded for the 8-hour primary standard.

Source: 1999 Illinois Annual Air Quality Report.

Significant Harm levels for five of the "criteria pollutants", namely, ground-level Ozone (0_3), Sulfur Dioxide (SO_2), Carbon Monoxide (CO), Particulate Matter (PM) and Nitrogen Dioxide (NO_2). The PSI levels have been divided into five categories, "Good", below 50; "Moderate", PSI range of 51-100; “Unhealthy”, between 101-200; "Very Unhealthy", between 201-300; and "Hazardous", with the upper PSI limits between 301-500. A new Air Quality Index (AQI) has recently been implemented to replace the PSI. The AQI was adopted in August 1999, and will be utilized in Illinois beginning January 1, 2000. The first AQI numbers for Illinois will be reported in the "2000 Illinois Annual Air Quality Report." The complete AQI reporting can be found in 40 C.F.R Part 58.

Unhealthy air quality is uncommon in Illinois, and Very Unhealthy air quality is rare. There has never been an occurrence of hazardous air quality in Illinois. The Illinois Environmental Protection Agency (IEPA) issues the (PSI) areas, or sectors, in Illinois. The areas correspond to metropolitan statistical areas with population greater than 350,000 (prior to 1999, 200,000). In 1999, all sectors in the Chicago area had 80% or more days in the "Good" category. In the Joliet/Will County Sector, 87.5% of the days were in the "Good" category. Refer to 1996 FEIS, Section 2.13.2 for additional (PSI) information.

2.14 Noise

Existing noise was measured at 13 representative receptor sites throughout the Project Corridor in 2000. A representative receptor is defined as an analysis site chosen to represent other like land uses. Table 2-19 lists existing noise readings for the 13 representative receptors. The noise levels are reported in dB(A), L_{eq}. One dB(A) is the smallest change in sound level an average person can detect under ideal conditions and L_{eq} is the equivalent, steady-state sound level.

Table 2-19
Existing Year 2000 Noise Levels

Representative Receptor	Noise Level dB(A), Leq
4	68
10	62
17	65
19	52
27	64
30	49
32	62
38	64
50	62
52	58
55	73
57	45
59	64

A total of 70 sites were determined to be noise receptors in the Project Corridor. These sites represent isolated farmhouses, scattered clusters of residences, subdivisions, churches and parks, located along the preferred alignment. Refer to Exhibit 2-14 for the location of the noise receptors in the Project Corridor. The noise receptors are grouped (using circles and spheres) for ease of labeling. For example, the noise receptors in the group on the extreme southern end of the Project Corridor each had an existing noise level of 68 dB(A).

The existing noise levels in the Project Corridor ranged from 45 dB(A) to 73 dB(A). This is due, in part, to the fact that some noise levels were recorded in areas near major streets or intersections while other noise levels are typical of rural locations. The noise analysis for the Preferred Alternative is presented in Section 4.1.

2.15 Solid Waste

No substantive change has occurred since publication of the 1996 FEIS. Refer to 1996 FEIS, Section 2.15.

2.16 Visual Resources

No significant change has occurred to this resource since publication of the 1996 FEIS. Refer to 1996 FEIS, Section 2.16.